

W. R. Metcalf Receives \$630 For Great Suggestion

William R. Metcalf, Test Facilities Branch, Engineering Division, Center Operations Directorate, has received a \$630 award for his suggestion concerning the water treatment of the small cooling towers in the Building 222 arc jet facilities.

Metcalf last year served as facilities project manager during the upgrading of the arc jet facility which is used to produce thermal effects required for testing re-entry systems such as skin surfaces for the Shuttle Orbiter.

His project involved expansion of the cooling water system as well as other basic changes within Building 222.

Another project, separate from Metcalf's was the development

of an industrial water treatment system.

Metcalf discovered that a by-product of his efforts was an excess of high quality, low solids water which, if run into the cooling tower, would eliminate the need for the industrial water treatment.

His proposal to this effect was adopted by the Center Operations Directorate and resulted in the deletion of plans for a separate industrial water treatment system and net savings of \$26,318.80 to JSC.

Recipients of the JSC Suggestion awards are determined by the awards committee.

Employees should send suggestion forms to AH/5.

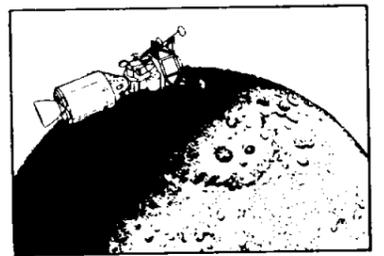


SUGGESTION WINNER—William R. Metcalf, Test Facilities Branch, Engineering Division, Center Operations Directorate received a \$630 award for a suggestion which saved the Center \$26,318.80. The suggestion concerned the water treatment of the small cooling towers in the Building 222 arc jet facility. Shown in the photo with Metcalf are Jack A. Kinzler, (r) Chairman, JSC Suggestion Committee, and Joseph V. Piland, (l) Director, Center Operations.

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER

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Hurricane Awareness Conf. Held At JSC

The Texas Coastal and Marine Council recently held a Hurricane Awareness Conference at JSC.

State Senator A. R. Schwartz of Galveston, council chairman said the conference was called to increase general personal preparedness for the hurricane season which began this month.

Dr. Robert H. Simpson, former director of the National Hurricane Center in Miami, also participated in the conference.

Although June marks the beginning of the hurricane season, July, August and September are the months when these storms are most likely to affect the JSC area, according to Bert Smith, JSC's Emergency Planning Officer.

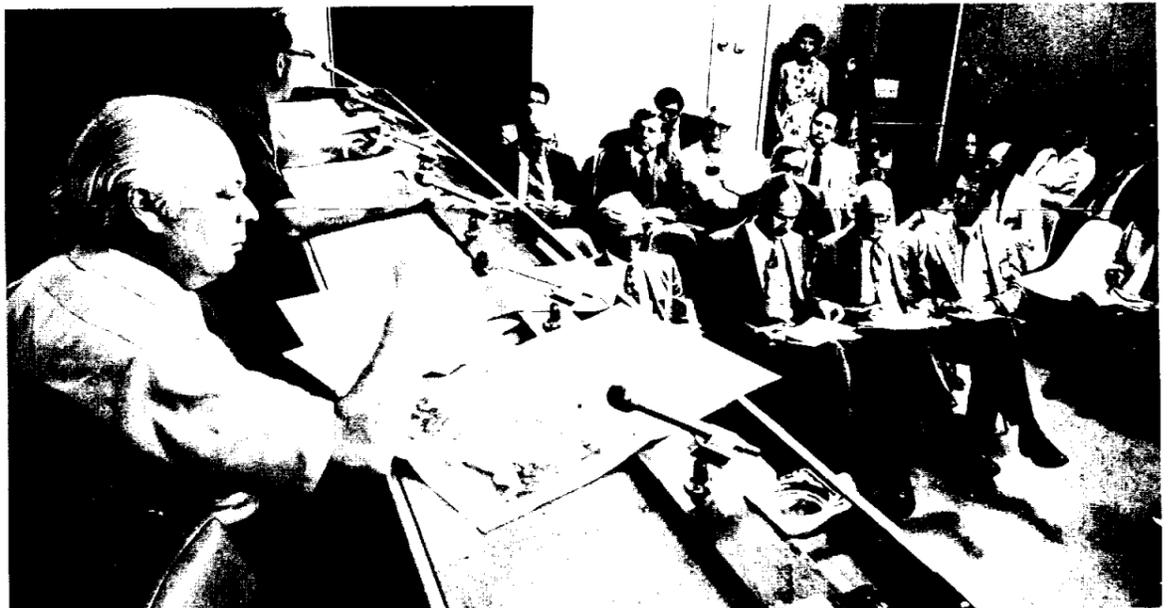
Smith was the Center's official

representative at the conference. He said JSC's hurricane plan will be released soon. Information concerning the plan and other hurricane facts will appear in a future edition of the Roundup.

Zindler To Speak

Marvin Zindler, Houston television newsman and consumer advocate, will be the guest speaker at a dinner meeting sponsored by the JSC Toastmasters Club. The event will be held in the Barcelona Room of the Nassau Bay Hotel, 1600 NASA Road 1, at 6:30 p.m., Tuesday June 18.

The dinner meeting is open to the public. For further information, contact David N. Holman, 483-6267.



HURRICANE AWARENESS CONFERENCE—The Texas Coastal and Marine Council recently held a hurricane awareness conference at JSC. Maps of flood prone areas, slides and filmed spots were presented at the conference by Dr. Robert H. Simpson, former Director of the National Hurricane Center in Miami, (right) and State Senator A. R. Schwartz of Galveston, council chairman, (left).



SMALL BUSINESS AWARDS—JSC buyers Eleanor Der Bing and Mike Bailas received awards during Small Business Week for their outstanding efforts concerning small business procurement. Mrs. Der Bing processed the largest number of individual contracts set aside for small businesses while Bailas claimed the largest dollar value of Set-Asides. Jame Neal (2nd from left) presented certificates to Eleanor and Mike. Pictured also is H.T. "Chris" Christman, Small Business Specialist (right).

NASA Takes On Energy Projects

NASA currently is involved in a wide variety of energy-saving projects with a number of other government agencies.

One cooperative program is with the Office of Coal Research, U. S. Department of Interior. The two agencies hope to achieve more efficient use of U. S. coal resources.

NASA is also evaluating the potential use of advanced technology in "topping" cycles to drive electric power generating plants as a means to effect fuel savings of up to 20 percent for the same power output. Additionally, 33 percent less heat rejection would be achieved, thereby reducing thermal pollution.

NASA is working with the Environmental Protection Agency to develop a cleaner and more efficient alternative to the internal combustion engine for light

duty motor vehicles. This effort focuses on improving performance and lowering cost of present small gas turbine systems.

In addition, the Agency is engaged in a program with the Federal Railroad Administration of the Department of Transportation (DOT) to investigate the application of advanced diesel cycle engines for buses, trucks and trains.

This program was initiated in response to a DOT requirement for low pollution, low fuel consumption engines in the range of 400 horsepower for buses and 7,500 horsepower for trains.

The ocean collects and stores solar energy, giving an advantage to an electric power plant fueled by ocean thermal energy. In the Gulf Stream, there is about a 30-40 degree difference in

(Continued on Page 3)



EXAMINING BLUEPRINT—Charlie T. Rogers of the Technical Services Division at JSC examines a blueprint of an ATM panel. Charlie is chief of the Assembling Machine section in Tech Services.

NASA Tech Aids In Research

An ingenious application of tiny electronic body sensors developed by NASA for space research has led to development of a technique to remotely measure the precise walking patterns of children with cerebral palsy.

Understanding the walking patterns or gait of these children is important in prescribing physical therapy for individual leg muscles.

Conventional methods involve literally wiring the patient to the muscle-measuring machine. However, consistent, noise-free readings are difficult to obtain because jerky leg movements can cause motion-induced errors and young patients are often inhibited by awkward body electrodes and trailing wires.

Fran Ford, an orthopedic research associate at the Stanford University Children's Hospital, Palo Alto, Calif., aware of a NASA Technology Briefing on space-developed body sensors, contacted Sal A. Rositano, a research engineer at the nearby Ames Research Center, Mountain View, Calif. for help in developing a better system for gait measurements of her cerebral palsy patients.

Rositano explained to Miss Ford NASA's experience with pre-amplifiers, body electrodes, telemetry systems and similar devices.

Edward P. Luzzi of L-M Electronics, Daily City, Calif., an Ames contractor whose firm had developed small, highly sophisticated remote monitoring devices was also consulted. An expert on telemetry system problems, Luzzi made available at no cost three new postage-stamp-size amplifiers.

These amplifiers, attached to muscle-sensing electrodes could send impulses to a small telemetry transmitter worn around the patient's waist which then would relay the signals to a receiver in the test room where the data could be recorded. Thus the patient would be free of cumbersome equipment and more accurate test results could be achieved.

Working on their own time Luzzi and Rositano designed and

built the unit. They sent it to the Children's Hospital where Miss Ford reported immediate success on her first patient. She reported the gait data was not distorted and error-free results were obtained.

To date, Miss Ford has successfully tested over 30 children suffering from the disease. She believes the simple, portable system will have wide application in cerebral palsy research.

Proposals Requested

JSC has asked for proposals from twenty-one firms for producing a basic simulator to support the training of crew members for piloting the orbiter vehicle during the Orbiter 1 development flights of the Space Shuttle Program.

Tasks include development, design, fabrication, installation, checkout, and six-months (12 man-months) support of one Orbiter Aeroflight Simulator (OAS). Proposals must be received no later than 5 p. m. CDT, July 10, 1974.

Attention Singles!

There will be a "singles party" Friday June 21 starting at 8 p.m. in the Party Room of the Chateaux Dijou apartments in CLC.

For further information contact Jerry, X3561.



Presenting Picture—Keith McGee and Kathy Jackson, two of the 25 students whose experiments were selected for the Skylab mission present a photo of the entire student group to astronauts Alan Bean and Joe Kerwin. Kathy is the daughter of JSC employee Jack Jackson (EW54). Keith attends Rice University. The group photo was taken at Marshall Space Flight Center.

JSC Personality Profile: Charlie Rogers

Charlie T. Rogers is a man who likes to try interesting and innovative things. Perhaps this characteristic is what prompted him in 1959 to join NASA's Space Task Group—the 36 employees given the responsibility to launch the United States' first manned space mission. And maybe that's the reason he's still with the space program after 33 years of service.

Charlie is chief of JSC's Assembling Machines section, Technical Services Division. His section is responsible for assembling and testing hardware built by Tech Services.

"I feel fortunate to have grown up with the Space Program, Charlie says, It's a once in a lifetime opportunity."

Like most Space Task Members, Rogers is proud of the fact that he worked closely with the seven original astronauts, "Seeing the dedication and courage of those guys as well as all of the people involved with them gave me a great deal of confidence in the space program which has lasted through the years," Charlie related. "Everyone was so willing to work and so ready to involve themselves beyond the call of duty."

Charlie's own involvement in UHCL Offers Courses

Beginning in September, both undergraduate and graduate classes, geared to specific needs of students in the JSC area, will be available at the University of Houston at Clear Lake (UHCL).

UHCL emphasizes quality instruction, interdisciplinary programs and small classes. The campus is chartered to offer instruction to juniors, seniors, and graduate students either on a part-time or a full-time basis.

Degree programs offered in the first year of operation will be Business and Industry; Professional Education; Public Affairs; Human Sciences and Humanities; and Languages and Literatures. Course schedules will be available soon.

To obtain admission applications, write Mrs. Patricia Allen, 2700 Bay Area Boulevard, or call her at 488-6849.

the space program has gained him the Sustained Superior Performance Award and the Outstanding Performance Award.

He lives in League City with his wife, the former Judie Taylor and their son, Charlie, Jr. Their three daughters Dianne, Daphne and Susan are all married.

Originally from Lynchburg, Virginia, the Rogers moved here when Charlie transferred to JSC from Langley Research Center in 1962. "We all consider ourselves Texans now," Charlie says.

Besides his job at JSC, Charlie enjoys working in the community. Currently, he is serving his second two-year term with the League City-City Council.

Charlie finds his work with the council challenging, "The important thing is to stay on top of things, listen to people, and try to make sure that the city is progressive," he says.

For relaxation, Rogers enjoys freshwater fishing, swimming and camping. He also likes roller skating and scuba diving. He has made some attempts at sky-

diving. One experience he will never forget.

"The first jump I made was perfect, everything went off well. But the second jump was chaotic. Maybe I pushed off the plane wrong, but before I knew it the parachute riser lines were all between my legs. They had gone haywire! When the parachute finally opened, I said to myself, "Charlie, you've got a wife and four children, now what in the world are you doing up here?" That was Charlie's second and last attempt at skydiving.

Adventurous, hardworking, dedicated, personality-plus-that in essence, is what Charlie T. Rogers is all about.

As for his career with NASA, "I wouldn't give anything for it!" Charlie beams.

The Roundup hopes to make "Personality Profile" a regular feature. If there are suggestions about interesting personalities, send them to AP/3, attention Roundup [Include your name and extension.]



BOWLING LEAGUE WINNERS—Pictured above are winners of the 1974 Jimmy Warren Memorial Bowling League. From left to right are John Dornbach, Jim Liput, John Sargent, Ed Shumilak, Gerald McKain and Harold Prior.

Funeral Services Held For Williams

Funeral services were held recently for Charles K. Williams, Deputy Manager of Manufacturing and Testing, Shuttle Orbiter Project Office at JSC.

During Skylab, Williams was manager for EREP Engineering and Technical Integration. He also served as Deputy Manager of

Engineering, in the Apollo Applications Program Office and Spacecraft Manager for Gemini III.

Williams was born February 8, 1925 in West Frankfort, Illinois. He received a B.S. degree in Physics from Southern Illinois University.

Survivors include his wife, Mrs. Judith Williams of Seabrook; one daughter, Suzanne; and two sons, Brent and Mark.

Williams had received the NASA Exceptional Service Medal and the Sustained Superior Performance Award.

Mrs. Dunseith Dies

Janie M. Dunseith, 327 Forest Lake Drive, died recently at the Space Center Memorial Hospital. She was the wife of Lynwood Dunseith, Deputy Director of the Data Systems and Analysis Directorate at JSC. Other survivors include a daughter, Robin; and two sons, Lynwood, Jr. and Andrew. Funeral services were held at the Jack Rowe Funeral Chapel.

Round-Up Swap-Shop

Swap Shop advertising is available to JSC and on-site contractor personnel. Articles or services must be offered as advertised, without regard to race, religion, sex or national origin. Ads should be 20 words or less, including home telephone number. Name and office code must accompany, but need not be included in ad copy. Typed or printed copy must be received (AP3 Attn; Roundup) by Thursday of the week before publication.

VEHICLES

15' Little Jay self contained '67 travel trailer, \$1250. 644-0315.
 68 blue Corvette, T-bar, new tires, \$3,000, 944-6988.
 57 Chevy, 283 Corvette engine, headers, Holly 600 carb, fuel injected heads, new clutch/pressure plate, 4 spd trans, rear mags, hijacker air shocks, nw blc paint nds interior work, \$700, Johnny, 4623 or 534-2476.
 Bike, boys, 26" 3 spd, xint cndn, \$25, 488-4005.
 68 Olds 98, loaded, all working, 75,000 mi, vry clean, \$600, Edwards, 331-4764.
 Toyota Corona wgn, 73 ac, am-fm, lug rack, radials, 4 spd trans, 488-1075.
 65 Chev 3/4 ton, 3 spd, air, 60 k mi wi 10 1/2 ft Heron camper, fully self contained, intercom, dual electric system, nice, new, \$7000, now \$1800, 482-3100 aft 4:30.
 53 Chevy 2d, blc, orig, new tires, runs gd, looks great, 78k actual mi, std trans, \$625 or trade, Underhill, 482-3100.
 64 Impala, std shift, gd tires, rusty but fine engine \$250, Barnett, 482-1539.
 70 Firebird wh rims, (5) new, still in box, \$50 for all, 333-4053 aft 5.
 66 MGB GT, new radial, nw exhaust, nw batteries, xint cndn, 488-2754.
 68 Pontiac 9 pass SW, pwr, air, nw tires, air shocks, clean, \$695, X4351, Burton, 471-0778.
 17' travel trailer, self-contained, sleeps 4, air, awning, car mirrors, jacks, full hookups, equalizer hitch, sway bars, elec br cntrols, turquoise appliances, \$1,500, Schmidt, 472-8908.

PROPERTY AND RENTALS

Nw 2-story townhouse, 2-1/2, firepl, shag carpet, washer/dryer, refrig, drapes incl, \$21,000, Peggy, 7409 or 534-6257.
 All-yr-lease, 650 acres, deer, doe permit, ducks, squirrel, birds, fish, cabin, utilities, stands, oats-family plan, 473-4606.
 House for sale in Rainbow Valley, walking distance to Alameda Mall, ovr 1500 sq ft, 3 or 4 bdrms, 2 bath, all bltins, custom drapes, cntrl a/h, mint cndn, \$26,000, 661-5859.

MISCELLANEOUS

Golf clubs and bag, irons, 3, 5, 7, 9, wedge and putter, woods land 3, gd cndn, \$45, 488-4005.
 35mm camera Minox SRT 101 wi f 1.4 lens and case, xint cndn, Whittle, 554-7098.
 Home workshop pwr tools, Chauvin, 473-3321.
 Surf board, 5'6" gd cndn, \$40, Bob, 474-4765.
 35mm slide projector, TDC, lots of slide trays, \$20, Sampsel, 471-0172.
 Stamps, buy, sell or trade plate blcs, or sheets, 488-0317.
 Encyclopedia Britannica, 73 edition, xint cndn, \$350, 487-1247.
 Sony stereo tuner, am/fm stereo, 2 yrs old, \$50, 488-2754.

HOUSEHOLD ARTICLES

Moving, must sell, queen sz mattress and bx springs, 1 yr old, 10 yr guarantee, Philco cnsl stereo/radio combo, \$160, Packard Bell color tv, 19" table model, \$250, 944-6988.
 19" portable b/w t.v., gd cndn, \$45, 944-6988, dark brown love seat, \$75, 944-6988.
 Wool rug, \$3, 488-4005.
 Simmons maple baby bed wi mattress, gd cndn, \$20, 488-4367.
 Club chair, green vinyl, very nice, \$35, 482-3100, Underhill.
 Solid oak dbl bed, rails, li nw, ideal for boy's bdrm, \$25, McCreary, 946-5285.

84" sofa and matching chair, red floral, mediterranean style, vry gd cndn, \$100, Ferguson, 482-3241 aft 5.

WANTED

Small, gd cndn used powered outboard motor, 1.7 hp, 2.5 hp or 3 hp, no larger, 946-1965 aft 4:30 p.m.
 Portable manual typewriter wi French language diacritics, 649-1437.
 18-22 ft motor home must sleep 6 and be in gd cndn, 991-2695.
 Amateur radio equipment, working or otherwise, Lindsey, 488-0517.
 Carpool from vicinity of Northline, shopping center on fm 149 to JSC, 8-4:30, also carpool nded from Northwest shopping center to JSC, same hrs, Carol, x4731.
 Garage wi light to rent for 1 month in Nassau Ray/CL area, Len, x3217.

BOATS

12' unsinkable fun sailboat, Fiberglass/Epoxy hull, jib and mainsail, \$125, Cernan, 333-2383.
 70, 17 ft, Fabuglass Trihull wi accessories, 115 hp Evinrude recently reconditioned wi nw rop big wh trailer, \$2200, 334-1688.
 73 Harley Davidson Super Glide, 5000 mi, custom paint, \$2600, 331-5667.
 16 ft quality craft, semi-vee hull, 66 merc, 500 EI, xint cndn, trailer, skis, anchor, et, \$600, Beverly, 554-6139.
 22' Pearson sail boat, 40 hp electric start Evinrude OB, big wh tilt trailer, extras, vry gd cndn, \$850, Edwards, 331-4764.

PETS

Dalmatian puppies, well spotted, gd disposition, shots, wormed, many champs in pedigree, \$80, 481-4660.
 AKC adult German Shepherd watchdog, free to right home, 488-3188.
 ADC registered Lhasa Apso puppies male and female, 334-1168.
 IKC Reg p-ek-a poo pups, weaned and wormed, 6 1/2 wks old, five males, \$60, 479-6766.
 Baby gerbils, \$1.50 each, Whitsett, 488-1777.

Energy

(Continued From Page 1)

temperature between surface water and water at a depth of 600 meters (2,000 feet).

The difference could operate heat engines which in turn could drive electrical generators.

Tapping the energy of the Gulf Stream could supply all the growing electrical energy needs of the United States as far ahead as 1985 with only a three-tenths of a degree reduction in the temperature of that great ocean river.

This reduction may actually be beneficial as it would offset slightly the ocean's thermal pollution (heating up) due to other uses.

Take stock in America.
Buy U.S. Savings Bonds



SHUTTLE TRAINING AIRCRAFT—The first of two Gulfstream II aircraft to be used for Shuttle crew training stopped at Ellington May 20-22, for documentary photography and examination by Aircraft Operations and program officials. Manufactured at the Grumman-American plant in Savannah, Ga., the aircraft is now at the Grumman Bethpage, N.Y. plant for extensive modifications and is scheduled to return to Ellington around March 1976 to begin shuttle pilot training. Shown examining the aircraft log book are l. to r. Jack Lacey, Central U.S. Grumman Service Representative, Joe Algranti, Chief Aircraft Operations Division, JSC, and Jack Buxton, V. P. of Grumman's Houston operations. Shuttle Training Project manager Charlie Haines is in the cockpit of the aircraft.

EAA Attractions

TABLE TENNIS

Tomorrow, June 8, is the day for the semi-annual tournament at the Gilruth Recreation Center. The tournament will be held from 10 a.m. to 4 p.m.

Several openings are available in the 32 player field.

Also, group classes for beginner and intermediate table tennis players will begin June 17. Classes will be limited to 12 players each and will be conducted by Table Tennis Unlimited.

Contact Steve Jacobs for Table Tennis information.

PICNIC

There will be an arts and crafts exhibit at the JSC Country Fair Picnic, September 14. Employees who would like to display their work should contact Karla Garnuch, X-5309.

TICKET CORNER

Sea-Arama, May-June, adults \$3, children \$2.
 Astros, coupons any game, \$2.50 and \$3.50
 Astroworld, all season, adults \$4.25, children \$3.25
 Six Flags, all season, adults \$5.60, children \$4.70
 Seven Seas, all season, adults \$3, children \$2.20
 Disney Magic Kingdom Club, free

ALLEY THEATRE

The Alley Theatre Corporate Subscription program is again being offered to JSC and contractor employees.

Under the program, season tickets for next year's six performances are available for \$19.98.

A brochure will be distributed soon which will explain the procedures for ordering season tickets.

The deadline for placing orders under this special program is April 30, so don't delay in getting your orders in the mail.

FOOTBALL

Don't miss the World Football League Houston Texan football games. Get your season tickets today! Fans can view 10 games for \$70. There will be no exhibition games.

The new, innovative WFL

rules with kickoffs from the 30 yard line, two point conversions, no fair catches and 7 1/2 minute periods to settle a tie should give you an idea of the excitement the games will hold.

Call George Miles, 688-1444 for season tickets.

Aerospace Club Plan Summer Trips

If you are a member of the Aerospace Employees Travel Club, chances are you're in store for an action-packed summer.

Pending trips include a week-end trip to the horse races at Lafayette, La, on June 22, \$25/person; a six-day, five-night trip to Mexico City, August 1, \$150 person; a 12-day trip to Hong Kong, August 1, \$776.38/person; including round trip air transportation, nine nights at the

Hong Kong Hyatt Regency, guides, and breakfast and dinner each day.

Also being considered are a Caribbean cruise, trips to Europe, the Orient, Central America, Six Flags and an "African Safari" in Dallas; and a fall weekend at Big Bend National Park.

For more information, call Helen Statz, X-4039, Hal Parker, X-6321 or Ray Nieder, X-4391.

For Your Information . . .

Although the paper industry is presently operating at a near capacity level, national demands for all types of paper exceed the available supply, thus creating a critical paper shortage.

JSC employees can help alleviate the shortage, particularly in office copier operations. Each employee should consider whether the copies made are really "worth the paper they are printed on."

To reduce unnecessary copy-

making, employees should review distribution lists, rout single messages to multiple addresses, and reproduce the absolute minimum number of copies.

There are also a number of ways to conserve paper at home including storing food in reusable containers, making fireplace logs from newspapers, using clean cloths rather than paper towels, reusing paper bags and participating in neighborhood paper recycling programs when possible.



PSC Graduates—The third class of Public Service Careers trainees graduated recently. Certificates were presented by Dr. Christopher C. Kraft, Center Director. From left to right are Pinkie Davis, Shirley Kelly, Dr. Kraft, Shirley Hayes, Patricia Johnson, and Maria Estrada. Not pictured are Catherine Wyche and Ruby Gatson.

ROUNDUP

NASA LYNDON B. JOHNSON SPACE CENTER HOUSTON TEXAS

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Editor: Janet Wrather Photographer: A. "Pat" Patnesky

NASA Launches Powerful Communications Satellite

NASA's Applications Technology Satellite-F (ATS-F) was successfully launched aboard a Titan III launch vehicle at 8:00 a. m. May 30 from Complex 40 at the Kennedy Space Center.

The spacecraft, renamed ATS-6 in orbit, is the largest communications satellite ever put into space. It was built by Fairchild Industries under contract to the Goddard Space Flight Center.

ATS-6 will be used to test a variety of new space communications concepts requiring the use of a geosynchronous-orbit spacecraft. These include broadcast of health and education television programs to small, low-cost ground receiving units in remote regions; aeronautical and maritime communications, position-location, and traffic-control techniques; and spacecraft tracking and data relay.

It will also be instrumental in

relaying television signals and other data during the ASTP mission.

ATS-6 contains more than 20 technological and scientific experiments, many of them international in scope.

The 1,402-kilogram (3090-pound) spacecraft consists essentially of an Earth Viewing Module (EVM) connected to a deployable reflector antenna that measures nine meters (30 feet) in diameter when deployed. Spacecraft control, communications, and experiment systems are located in the EVM. Electrical power is supplied by two semi-cylindrical solar panels on arms that extend over and beyond the antenna.

The spacecraft's most critical elements are the deployable antenna and the communications transponder. Through these two systems, ground controllers can

relay high quality communications signals on multiple frequencies at high transmitter power levels to simple land, sea, and air receivers located over a large geographical area.

For the first year of operation, ATS-6 will be located at 94 degrees west longitude over the equator. At this location, a point over the Galapagos Islands, the spacecraft will be in communications view of all the continental U. S.

Shortly after the spacecraft is on this station and checked out, it will be used, along with NASA's ATS-1 and ATS-3 now in orbit, to conduct the Health-Education Telecommunications (HET) experiment, which encompasses both educational TV and two-way medical teleconferencing demonstrations.

The new capabilities pioneered in these experiments are expect-

ed to be fed into operation satellite systems established by the private sector in the future.

The HET experiments are planned in three geographic areas: the Rocky Mountain region, the Appalachian states, and the states of Washington and Alaska. HET will pioneer delivery of high-quality educational and health services to millions of Americans in remote parts of these areas, whose mountainous nature makes TV reception from ground-based transmitters difficult.

The Federation of Rocky Mountain States (FORMS) is coordinating the installation of ground terminals for the HET experiment, not only in the Rocky Mountain States but also in Alaska and Appalachia.

This equipment, consisting of an inexpensive TV set, a special converter, and a simple antenna,

will either directly service a single community-type receiver or will be tied in with Public Broadcasting microwave or cable systems already operating in the cooperating states. Equipment for each of approximately 300 sites will cost less than \$4,000.

For Appalachia, the main broadcast point to the spacecraft is the NASA ATS site at Rosman, N.C. For the Rockies, the broadcast point is Denver, Colorado, and for Alaska it is Fairbanks.

For the HET experiments, ATS-6 will be able to relay two separate color TV signals, each accompanied by four voice channels. Thus, programs can be broadcast in several languages simultaneously, with the viewer being able to select among English, Spanish, or one of several American Indian dialects.

Give U.S. Savings Bonds



EARTH RESOURCES TECHNOLOGY SATELLITE MOSAIC

STATE OF TEXAS

ERTS—MOSAIC OF TEXAS—This photograph recreation of a 1:1,000,000-scale mosaic of Texas was made from a series of photos taken between November 1972 and August 1973 by the Earth Resources Technology Satellite (ERTS-1) and assembled by the Mapping Sciences Branch of the Earth Observations Division at JSC. From top to bottom and left to right, the original mosaic measures approximately 3½ feet by 3 5/6 feet. ERTS-1's altitude was 912 kilometers or 560 miles when this series of photos was made.